apple" exhibit

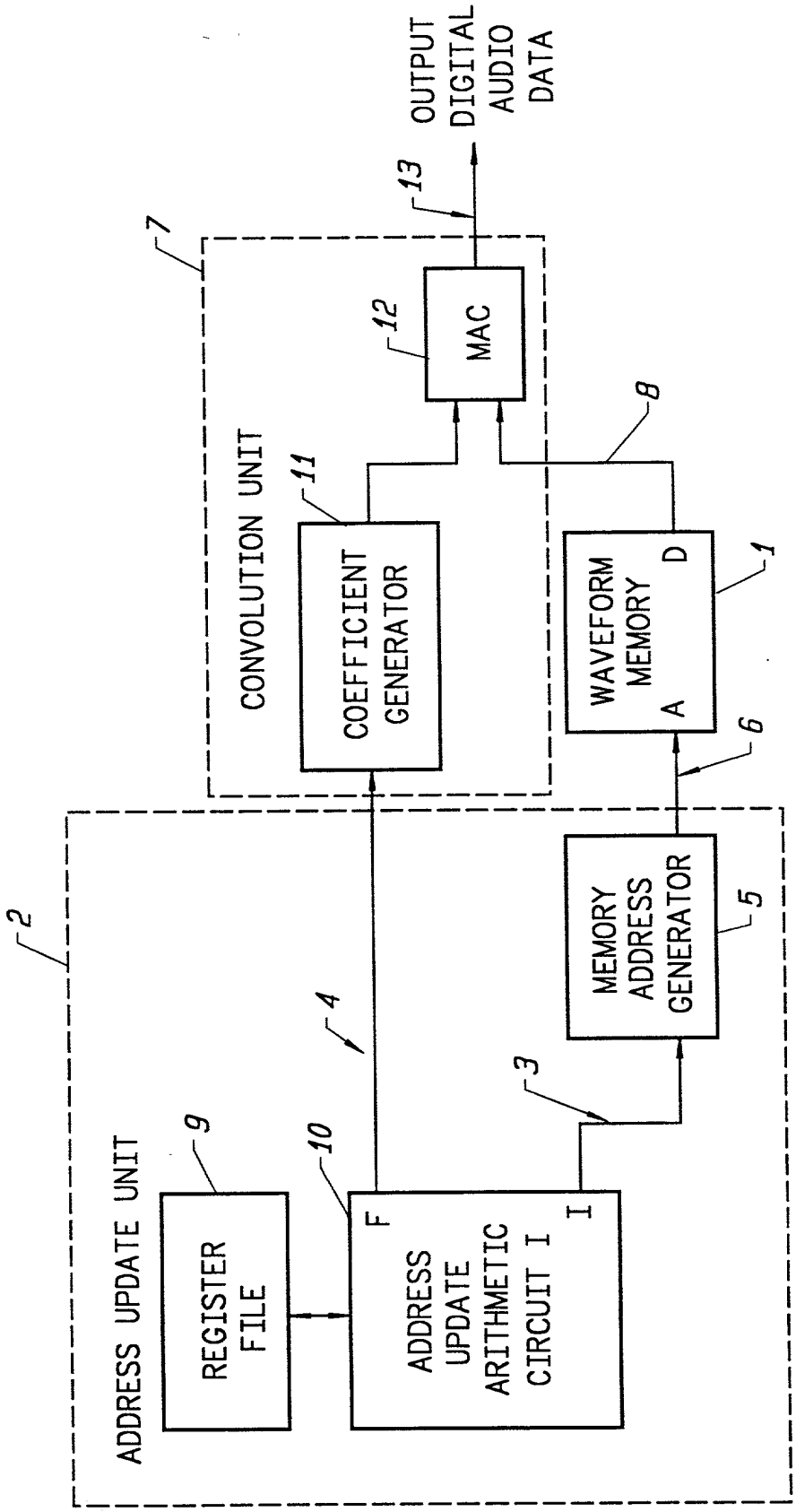

FIG. 1

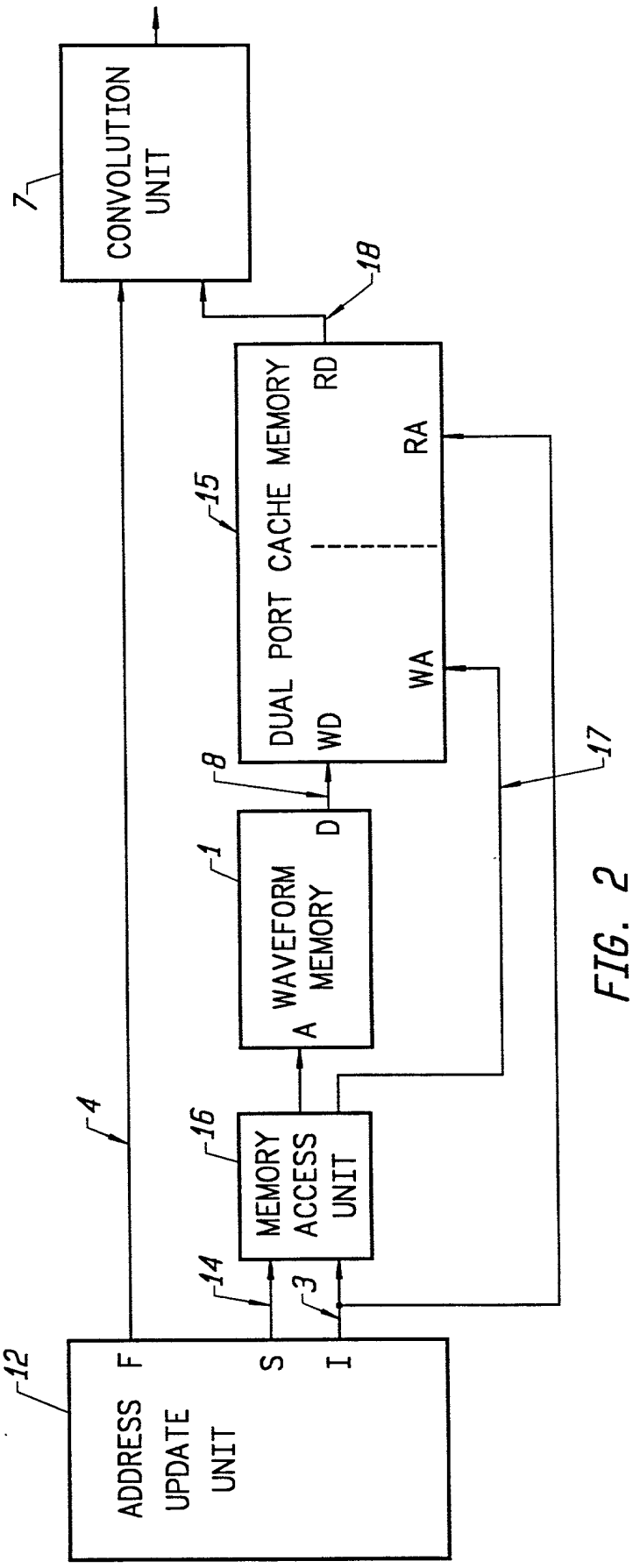
CONVOLUTION UNIT
7
18
DUAL PORT CACHE MEMORY
RD
RA
WA
WD
15
8
17
WAVEFORM MEMORY
A
D
1
4
MEMORY ACCESS UNIT
16
14
3
ADDRESS UPDATE UNIT
12
F
S
I

FIG. 2

ACCEPTED

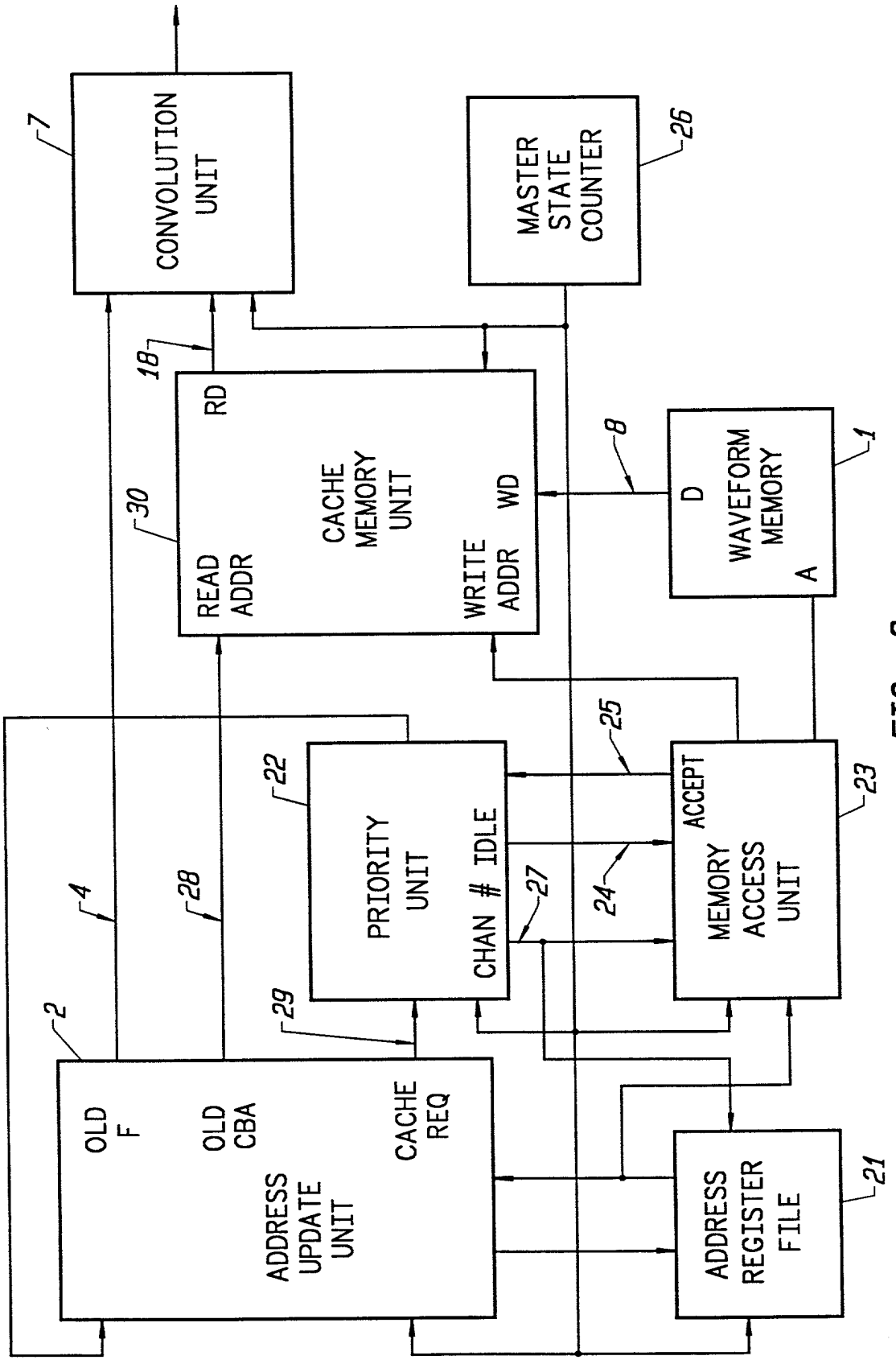

FIG. 3

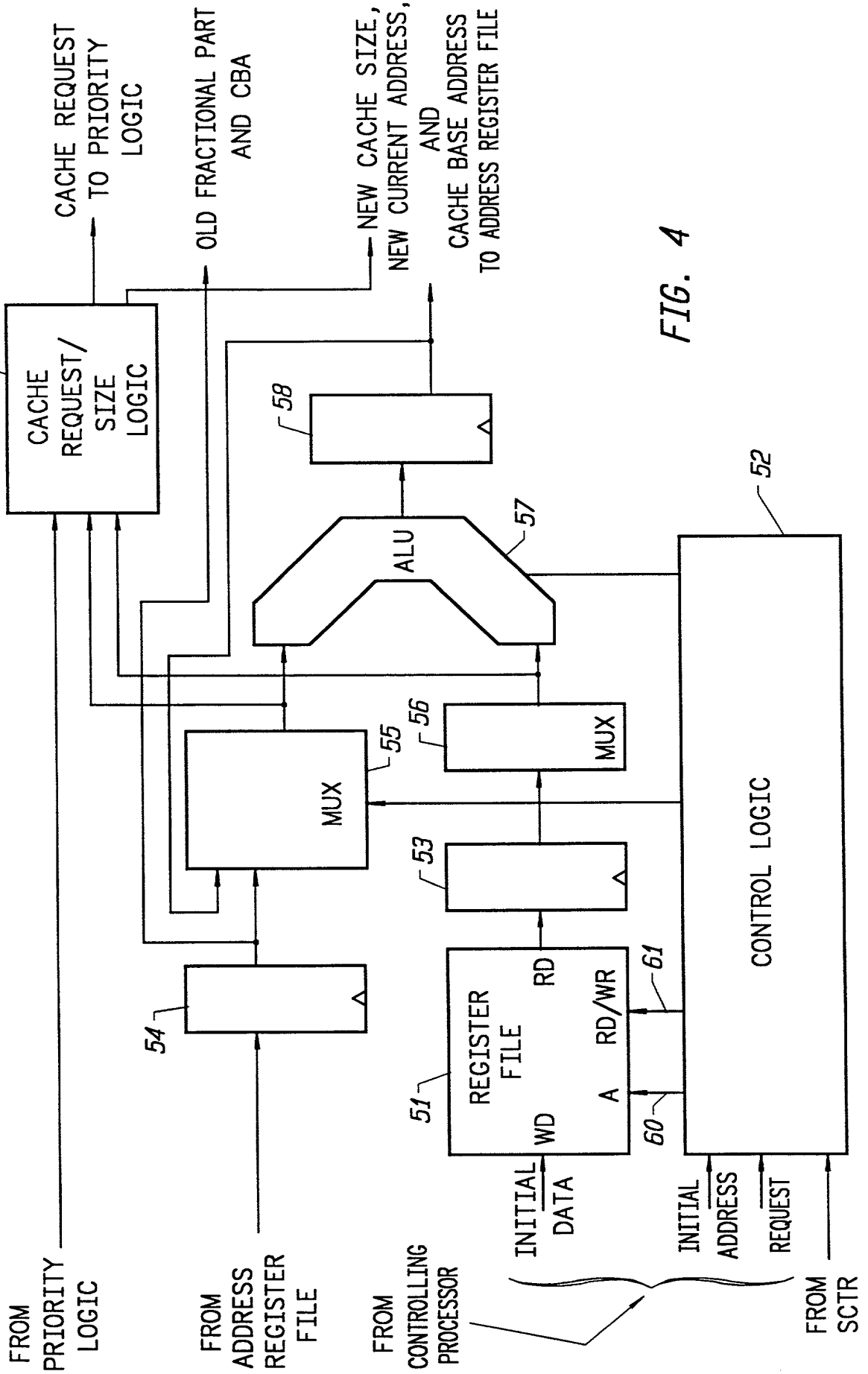
CACHE REQUEST TO PRIORITY LOGIC
OLD FRACTIONAL PART AND CBA
NEW CACHE SIZE, NEW CURRENT ADDRESS, AND CACHE BASE ADDRESS TO ADDRESS REGISTER FILE
59
CACHE REQUEST/ SIZE LOGIC
58
ALU
57
52
MUX
55
56
MUX
53
54
REGISTER FILE
WD
RD
A
RD/WR
51
60
61
CONTROL LOGIC
FROM PRIORITY LOGIC
FROM ADDRESS REGISTER FILE
FROM CONTROLLING PROCESSOR
INITIAL DATA
INITIAL ADDRESS
REQUEST
FROM SCTR

FIG. 4

20T220" Z2908800T

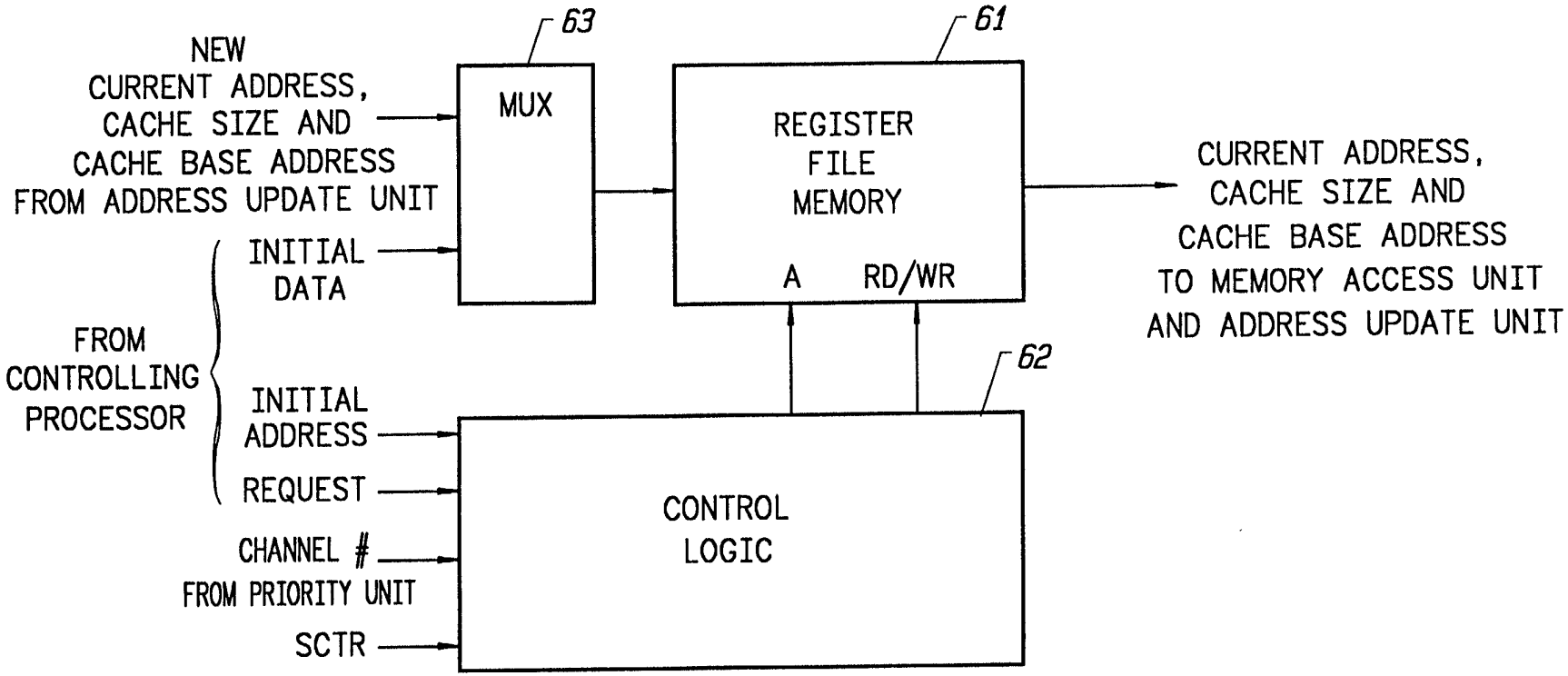

FIG. 5

Paul C. Haughey, Reg. No. 31,836, (650) 326-2400
Attorney Docket No.: 17002-003890US
Title: DIGITAL SAMPLING INSTRUMENT EMPLOYING CACHE MEMORY
Applicant: David P. Rossum
Sheet 5 of 12

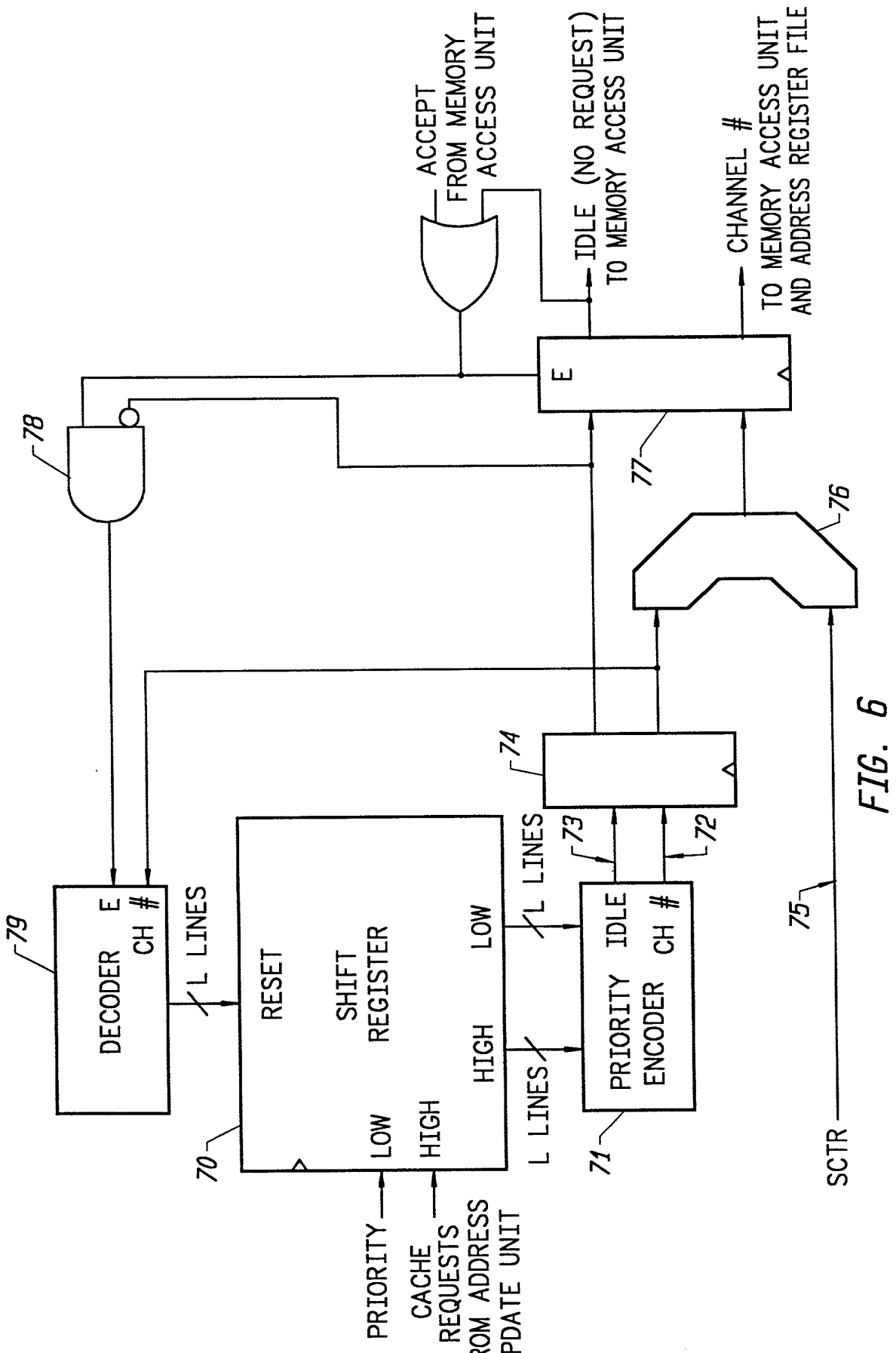
ACCEPT FROM MEMORY ACCESS UNIT
IDLE (NO REQUEST) TO MEMORY ACCESS UNIT
CHANNEL # TO MEMORY ACCESS UNIT AND ADDRESS REGISTER FILE
E
78
77
76
74
73
72
75
79
DECODER E CH #
L LINES
RESET
SHIFT REGISTER
LOW
HIGH
L LINES
PRIORITY IDLE ENCODER CH #
70
71
PRIORITY
CACHE REQUESTS FROM ADDRESS UPDATE UNIT
SCTR

FIG. 6

20F220 225080001

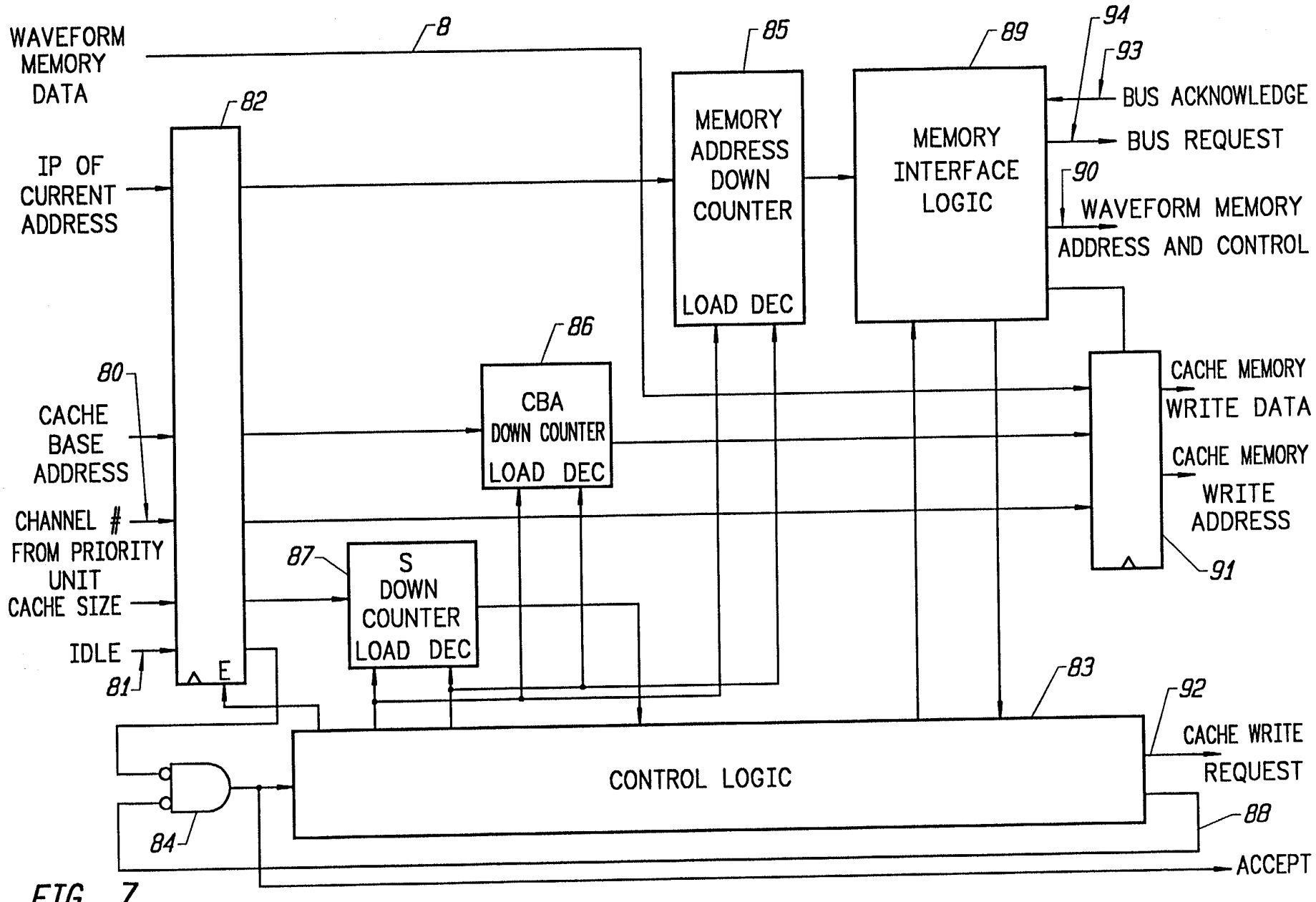

FIG. 7

Paul C. Haughey, Reg. No. 31,836, (650) 326-2400
Attorney Docket No.: 17002-003890US
Title: DIGITAL SAMPLING INSTRUMENT EMPLOYING CACHE MEMORY
Applicant: David P. Rossum
Sheet 7 of 12

20T320 "2250800T

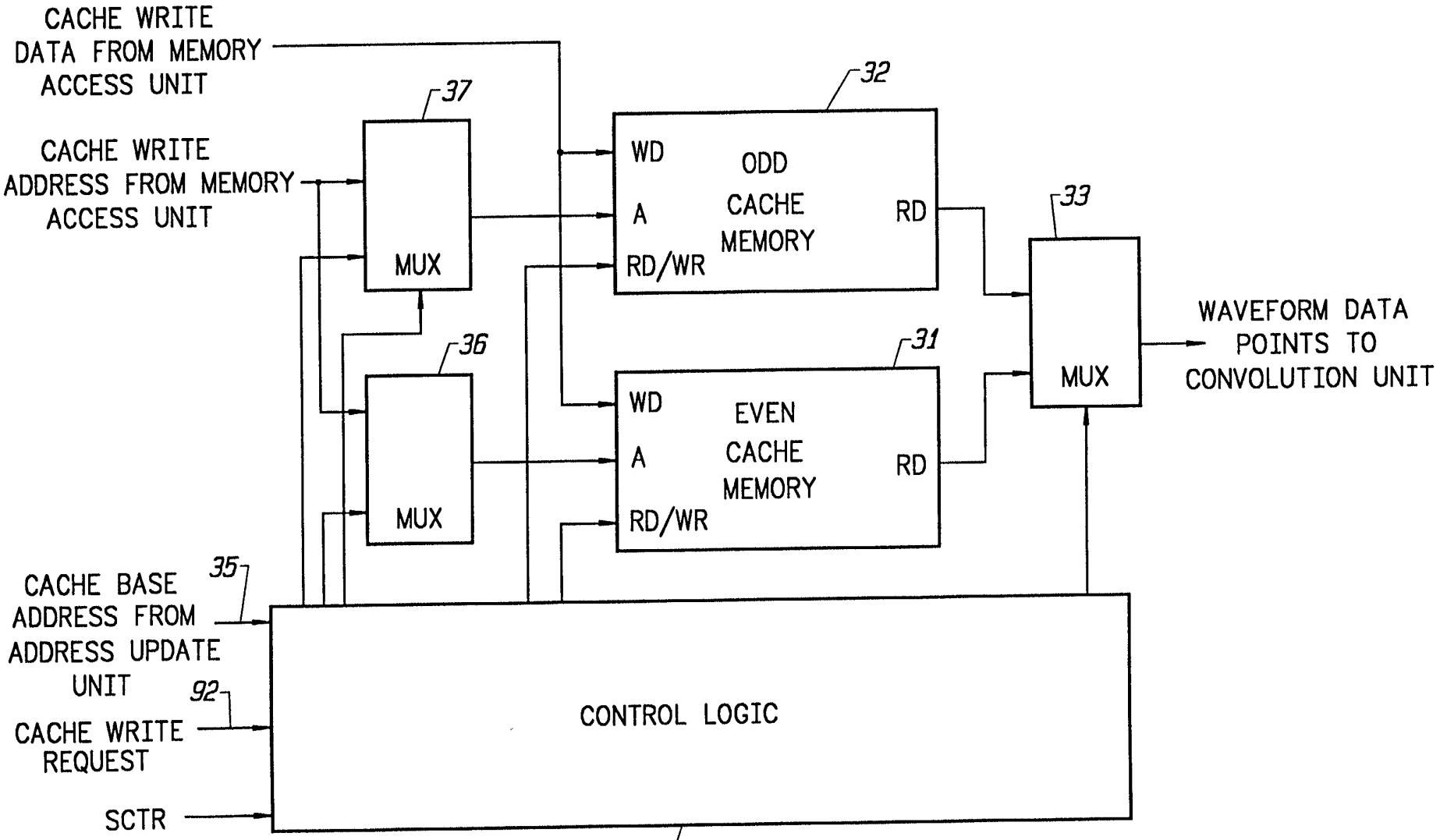

FIG. 8

Paul C. Haughey, Reg. No. 31,836, (650) 326-2400
Attorney Docket No.: 17002-003890US
Title: DIGITAL SAMPLING INSTRUMENT EMPLOYING CACHE MEMORY
Applicant: David P. Rossum
Sheet 9 of 12

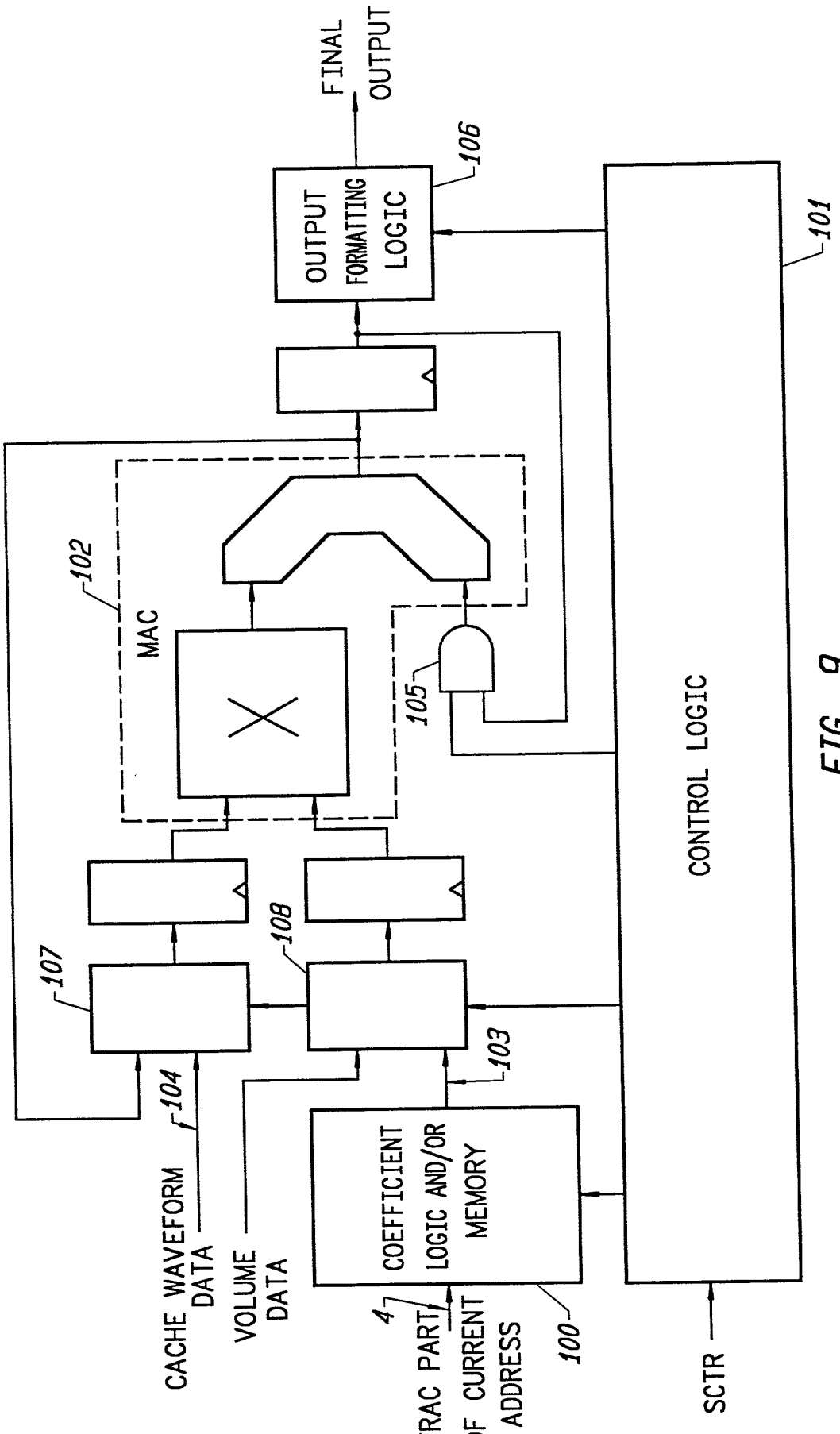

FIG. 9

Attach Sheet

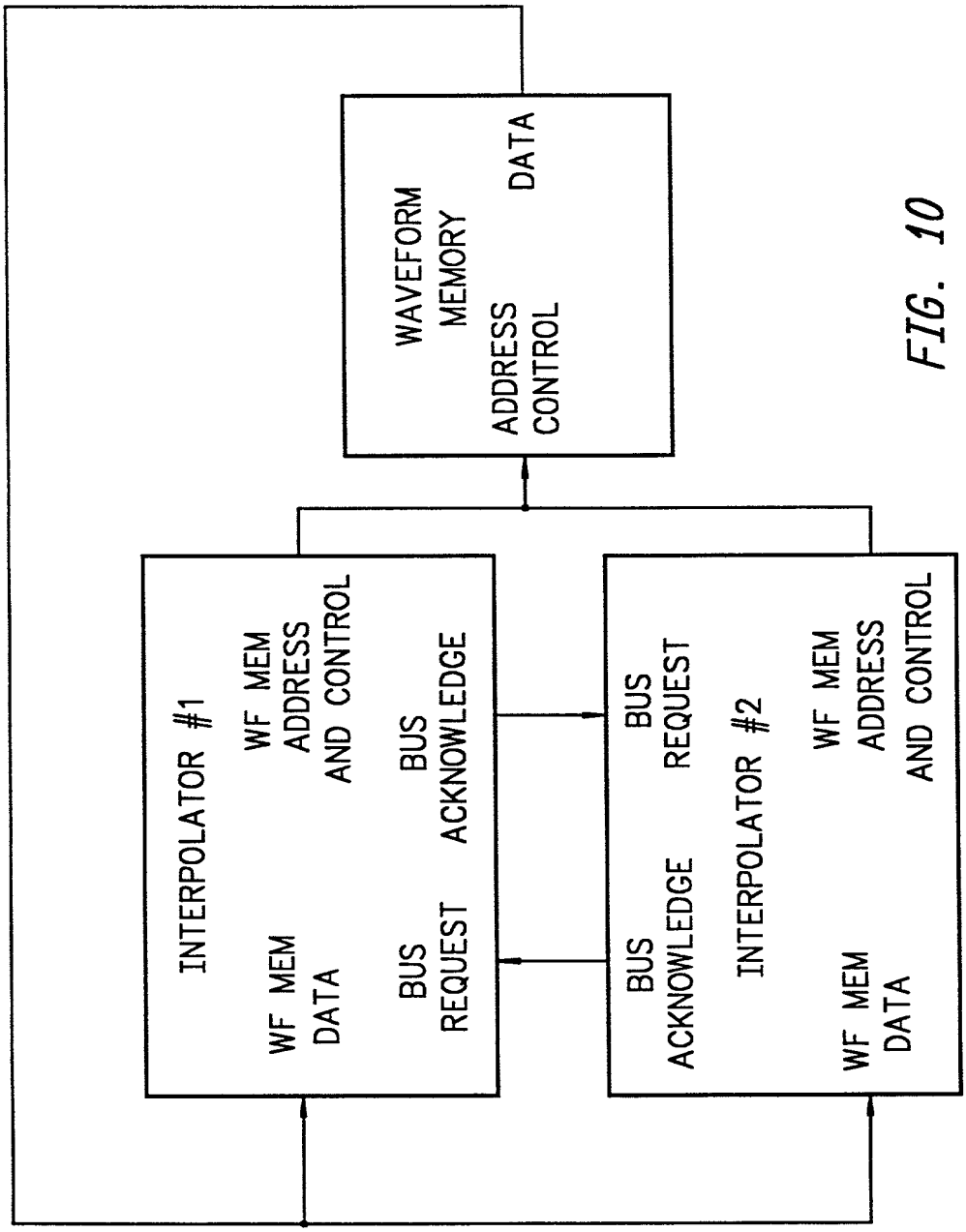
WAVEFORM MEMORY
DATA
ADDRESS
CONTROL
INTERPOLATOR #1
WF MEM DATA
BUS REQUEST
WF MEM ADDRESS AND CONTROL
BUS ACKNOWLEDGE
INTERPOLATOR #2
BUS ACKNOWLEDGE
WF MEM DATA
BUS REQUEST
WF MEM ADDRESS AND CONTROL

FIG. 10

Filed 2/20/04

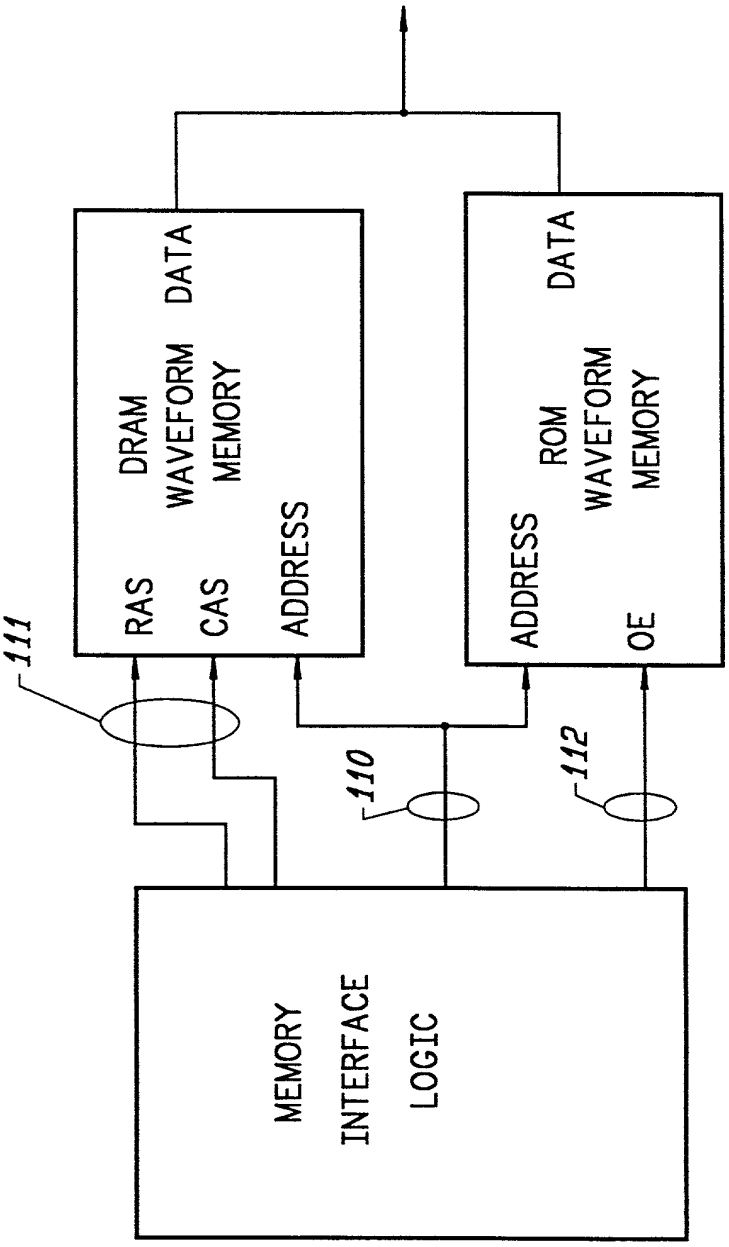

FIG. 11

20120725080001

STATE COUNTER (8 PER CHANNEL)	0	1	2	3	4	5	6	7	0(NEXT CHANNEL)
CBA ADDRESS	NEW VALID CACHE BASE ADDRESS ----------→							DON'T CARE	NEW VALID CBA
CACHE RAW READ OPERATION	NOP	READ POINT 0	READ POINT 1	READ POINT 2	READ POINT 3	READ POINT 4	READ POINT 5	READ POINT 6	NOP
CR READ OPERATION CBA EVEN	NOP	READ EVEN POINT	READ ODD POINT	READ EVEN POINT	READ ODD POINT	READ EVEN POINT	READ ODD POINT	READ EVEN POINT	NOP
CR READ OPERATION CBA ODD	NOP	READ ODD POINT	READ EVEN POINT	READ ODD POINT	READ EVEN POINT	READ ODD POINT	READ EVEN POINT	READ ODD POINT	NOP
EVEN CR OPERATION CBA EVEN	AVAIL FOR WR	READ POINT 0	AVAIL FOR WR	READ POINT 2	AVAIL FOR WR	READ POINT 4	AVAIL FOR WR	READ POINT 6	AVAIL FOR WR
ODD CR OPERATION CBA EVEN	AVAIL FOR WR	AVAIL FOR WR	READ POINT 1	AVAIL FOR WR	READ POINT 3	AVAIL FOR WR	READ POINT 5	AVAIL FOR WR	AVAIL FOR WR
EVEN CR OPERATION CBA ODD	AVAIL FOR WR	AVAIL FOR WR	READ POINT 1	AVAIL FOR WR	READ POINT 3	AVAIL FOR WR	READ POINT 5	AVAIL FOR WR	AVAIL FOR WR
ODD CR OPERATION CBA ODD	AVAIL FOR WR	READ POINT 0	AVAIL FOR WR	READ POINT 2	AVAIL FOR WR	READ POINT 4	AVAIL FOR WR	READ POINT 6	AVAIL FOR WR
MAU EVEN WRITE CBA EVEN	WRITE	WAIT	WRITE	WAIT	WRITE	WAIT	WRITE	WAIT	WRITE
MAU ODD WRITE CBA EVEN	WRITE	WRITE	WAIT	WRITE	WAIT	WRITE	WAIT	WRITE	WRITE
MAU EVEN WRITE CBA ODD	WRITE	WRITE	WAIT	WRITE	WAIT	WRITE	WAIT	WRITE	WRITE
MAU ODD WRITE CBA ODD	WRITE	WAIT	WRITE	WAIT	WRITE	WAIT	WRITE	WAIT	WRITE

FIG. 12

Paul C. Haughey, Reg. No. 31,836, (650) 326-2400